NHANES 2001-2002 Data Release
May 2004
Documentation for Laboratory Results

Laboratory 13 – Total Cholesterol

(1) Documentation File Date: April 23, 2004

(2) Documentation File Name: Laboratory 13 – Total Cholesterol

(3) Survey Years Included in this File Release: 2001-2002

(4) Component Description:

The data will be used to monitor the status of hyperlipidemia and the success of the National Cholesterol Education Program.

(5) Sample Description:

5.1 Eligible Sample

Participants aged 3 years and older were tested.

(6) Description of the Laboratory Methodology

6.1 Total Cholesterol

Cholesterol is measured enzymatically in serum or plasma in a series of coupled reactions that hydrolyze cholesteryl esters and oxidize the 3-OH group of cholesterol. One of the reaction byproducts,H_2O2 is measured quantitatively in a peroxidase-catalyzed reaction that produces a color. Absorbance is measured at 500 nm. The color intensity is proportional to cholesterol concentration. The reaction sequence is as follows:

cholesteryl ester hydrolase
Cholesteryl ester + H_2O ----------> cholesterol + fatty acid

cholesterol oxidase
Cholesterol + O_2 ----------> cholest-4-en-3-one + H_2O_2

peroxidase
$2H_2O_2$ + 4-aminophenazone + phenol ----------> 4-(p-benzoquinone-

monoimino)-phenazone + 4 H_2O

(7) Laboratory Quality Control and Monitoring

The NHANES quality control and quality assurance protocols (QA/QC) meet the 1988 Clinical Laboratory Improvement Act mandates. Detailed quality control and quality assurance instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Read the LABDOC file for detailed QA/QC protocols.

(8) Data Processing and Editing

Blood specimens were processed, stored and shipped to Johns Hopkins Hospital, Baltimore, Md for analysis. Detailed specimen collection and processing instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Read the LABDOC file for detailed data processing and editing protocols. The analytical methods are described in the Description of the Laboratory Methodology section.

(9) Data Access:

All data are publicly available.

(10) Analytic Notes for Data Users:

10.1 The analysis of NHANES 2001-2002 laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES 2001-2002 Household Questionnaire Data Files contain demographic data, health indicators, and other related information collected during household interviews. They also contain all survey design variables and sample weights for these age groups. The phlebotomy file includes auxiliary information such as the conditions precluding venipuncture. The household questionnaire and phlebotomy files may be linked to the laboratory data file using the unique survey participant identifier SEQN.

10.2 LBXTC:

The Laboratory 13 Data File contains laboratory test results for total cholesterol (LBXTC), which uses the reference analytic method. However, the NHANES Laboratory 40 biochemistry profiles also include measurements of total cholesterol (Laboratory 40 variable name: LBXSCH). The appropriate variable to use is LBXTC from Laboratory 13

10.3 LBDTCSI:

The Total Cholesterol in mg/dL (LBXTC) was converted to mmol/L (LBDTCSI) by multiplying by 0.02586.